REMARKS

Claims 1, 3-9, 11-13, and 15-22 were pending. Claims 1, 6-8, 12, and 13 have been amended. Claims 19 and 20 have been canceled. Claims 1, 3-9, 11-13, 15-18, 21, and 22 are pending.

The Office Action contains an objection to the drawings under 37 C.F.R. § 1.83(a). The objection is not well understood. The objection appears to be redundant to a drawing objection made in the Office Action dated March 13, 2003. Applicant's responsive drawing correction filed on June 13, 2003 was approved. The corrected drawings contain the color correction matrix 206 and the image processor 204. Applicant respectfully requests clarification of the outstanding objection to the drawings.

Claims 19 and 20 stand rejected under 35 U.S.C. § 112, first paragraph, based on an alleged lack of enablement. Claims 19 and 20 have been canceled in the interest of advancing prosecution. Applicant retains the right to pursue the subject matter of these claims, and other subject matter disclosed and enabled by the present specification, in this and other applications.

Claims 1, 4-8, and 12 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Pat. No. 6,320,668 to Kim. This rejection respectfully is traversed.

Claim 1 recites an image correction method comprising, *inter alia*, "obtaining reference outputs from an image sensor using a color image array, said reference outputs being indicative of outputs for a plurality of known reference colors, said plurality of known reference colors including white, at least three primary colors, and at least two other non-primary colors," and "obtaining a single, color correction matrix." The color correction matrix is obtained "by simultaneously minimizing each said respective error measure to obtain optimum overall correction for said plurality of known reference colors, including white."

Kim discloses a color correction method in which a color correction *conversion* matrix is derived from two intermediate matrices: the gray level correction coefficient matrix and the color correction coefficient matrix. Further, the color correction coefficient matrix is calculated using the gray level correction coefficient matrix. More specifically, the gray level correction coefficient matrix "reduces an error between the reference gray level data and the gray level scanning data to a minimum." See col. 19, lines 40-44. The gray level correction coefficient matrix is then applied to colorimetric scanning data to obtain gray level correction colorimetric data, which is used to calculate the color correction coefficient matrix. The color correction coefficient matrix is calculated to reduce "an error between a reference colorimetric data and the gray level correction colorimetric data." Col. 19, lines 51-54. The color correction coefficient matrix is then multiplied with the gray level correction coefficient matrix to obtain the color correction conversion matrix.

The Office Action seeks to improperly parse out selected portions of Kim as anticipating claim 1. Read properly as a whole, however, Kim does not teach or suggest an image correction method comprising "obtaining reference outputs from an image sensor using a color image array, said reference outputs being indicative of outputs for a plurality of known reference colors, said plurality of known reference colors including white, at least three primary colors, and at least two other non-primary colors," "determining an error measure for each of said plurality of known reference colors, said error measure representing a difference between *said reference outputs* and what would be expected for each of said reference outputs," and "obtaining a single, color correction matrix by *simultaneously minimizing* each said respective error measure to obtain optimum overall correction for said plurality of known reference colors, including white." Claim 1, and its dependent claims 3, 4, 5, 15, 16, and 21 are patentable over Kim.

Claim 6 recites an image sensor apparatus comprising, *inter alia*, "an image processor, operating according to a single, color correction matrix." The color correction matrix is obtained by "simultaneously minimizing respective error measures, each said error measure representing a difference between a reference output for a known reference color

from a color image array and what would be expected for said reference output, said color correction matrix being obtained according to at least the color white, three primary colors, and at least two additional non-primary colors."

Kim discloses an image processor operating according to at least three color correction matrices, one being the product of the other two. Kim teaches that the first color correction matrix is obtained by minimizing error in gray scale values. The second matrix is obtained by minimizing error in data resulting from the application of the first matrix to the scanned image data. Kim does not teach or suggest "an image processor, operating according to a single, color correction matrix," the color correction matrix having been obtained by "simultaneously minimizing respective error measures, each said error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for said reference output, said color correction matrix being obtained according to at least the color white, three primary colors, and at least two additional non-primary colors."

Claims 3, 9, 11, 13, 15-18, 21, and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kim in view of Japanese Pub. No. 02-074367 in the name of Yamaguchi. Applicant respectfully traverses this rejection.

Claims 3, 15, 16, and 21 depend directly or indirectly from claim 1. Claim 1 is patentable over Kim as discussed above. Yamaguchi has not been applied against claim 1. Even if Yamaguchi had been properly applied against claim 1 in combination with Kim, the deficiencies of Kim would not be overcome. Yamaguchi has been cited to provide weighting of important individual colors. Yamaguchi does not teach or suggest a modification to Kim to produce "an image processor, operating according to a single, color correction matrix," the color correction matrix having been obtained by "simultaneously minimizing respective error measures, each said error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for said reference output, said color correction matrix being obtained according to at least the color white, three primary

colors, and at least two additional non-primary colors." Claim 1, and its dependent claims 3, 4, 5, 15, 16, and 21 are patentable over the proposed combination of Kim and Yamaguchi.

Claims 9, 11, 17, 18, and 22 depend directly or indirectly from claim 6. Claim 6 is patentable over Kim, as discussed above. Yamaguchi has not been cited against claim 6. Even if Yamaguchi had been properly combined with Kim in rejection of claim 6, the deficiencies of Kim would not be overcome. Yamaguchi has been cited as providing individual color weighting. Yamaguchi does not teach or suggest how to modify Kim to produce "an image processor, operating according to a single, color correction matrix," the color correction matrix having been obtained by "simultaneously minimizing respective error measures, each said error measure representing a difference between a reference output for a known reference color from a color image array and what would be expected for said reference output, said color correction matrix being obtained according to at least the color white, three primary colors, and at least two additional non-primary colors."

Claim 13 recites a method of correcting an image from an image sensor comprising, *inter alia*, "obtaining a color correction matrix for said pixels, said color correction matrix being one which takes into account correction of incoming radiation for at least the color white, three primary colors, and two other non-primary colors by simultaneously minimizing error measures relative to each color." In addition, "respective error measures for said non-primary colors are weighted such that said correction matrix corrects for some of said non-primary colors more than said primary colors." Each error measure represents "a difference between a reference output for a known reference color from a color image array and what would be expected for each of said reference outputs." The color correction matrix is applied to obtain "a subjectively color-corrected and white-balanced image directly from an input image."

Kim discloses a system that relies on a combination of several matrices to obtain color correction. Kim does not teach or suggest "simultaneously minimizing error measures relative to each color." Yamaguchi, cited as providing color weighting, does not

cure the deficiencies of Kim. Yamaguchi does not teach or suggest how to modify Kim to produce a method of "obtaining a color correction matrix for said pixels...by simultaneously minimizing error measures relative to each color." Claim 13 is patentable over the proposed combination of Kim and Yamaguchi.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

By_____

Thomas J. D'Amico
Registration No.: 28,371
Peter McGee
Registration No.: 35,947
DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP
2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorneys for Applicant